Test Report
Consistency test

Project Name	Construction of RCC Culvert in Kempegowda Ward No-01
Client	The Executive Engineer, Yelahanka Division, BBMP
Job No	QECD/BBMP/YNK/PMC/2019-2020
Mix Type	PCC(1:4:8)
Contractor	Sri P Ravichandra
Test Method	IS : 4031 (Part 5) -1988 & Specification for Road & Bridge Works, MORT&H, Rev-V.
Material	Cement
Sample No	1
Sample Collected Date	12-Mar-2019
Test Date	21-Mar-2019

Sl. No.	Description	Trial 1	Trial 2	Trial 3	Trial 4	Trial 4
1	Weight of Cement	400	400	400	400	400
2	Percentage of water added (%)	27	28.5	29.5	30	30.5
3	Weight of Water (gm)	108	114	118	120	122
4	Initial Reading of Plunger (mm)	40	40	40	40	40
5	Difference (mm)	18	17	11	6	5.5

Results: Standard Consistency of Cement: 30.50%

Note:

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Test Report
Fineness test

Project Name	Construction of RCC Culvert in Kempegowda Ward No-01
Client	The Executive Engineer, Yelahanka Division, BBMP
Job No	QECD/BBMP/YNK/PMC/2019-2020
Mix Type	PCC(1:4:8)
Contractor	Sri P Ravichandra
Test Method	IS : 4031 (Part 5) -1988 & Specification for Road & Bridge Works, MORT&H, Rev-V.
Material	Cement
Sample No	1
Sample Collected Date	12-Mar-2019
Test Date	21-Mar-2019

Sl. No.	Determination	Trial 1	Trial 2
1	Weight of Cement before sieve (gm)	100	100
2	Weight of residue retained on 90um sieve (gm)	3.5	3.2
3	Percentage retained (%)	3.5	3.2
4	Average Percentage retained (%)	3.35	

Results: Residue of cement is: 2.9%

Comments: Maximum allowable residue by mass for ordinary portlad cement is 10%

Note:

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Test Report
Soundness test

Project Name	Construction of RCC Culvert in Kempegowda Ward No-01
Client	The Executive Engineer, Yelahanka Division, BBMP
Job No	QECD/BBMP/YNK/PMC/2019-2020
Mix Type	PCC(1:4:8)
Contractor	Sri P Ravichandra
Test Method	IS : 4031 (Part 3) -1988 & Specification for Road & Bridge Works, MORT&H, Rev-V.
Material	Cement
Sample No	1
Sample Collected Date	12-Mar-2019
Date	21-Mar-2019

Sl. No.	Description	Trial 1	Trial 2	Trial 3
1	Initial Distance between the indicator points of Lechatelier mould	11	10	11
2	Final Distance between the indicator points of Lechatelier mould	13	12	14
3	Difference or expansion	2	2	3
4	Average Differences or Expansion in mm	2.33		

Results: Difference in Expansion of Cement: 2.33mm
Comments: Maximum allowable Expansion of cement is 10mm.

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Test Report
Compressive strength test

Project Name	Construction of RCC Culvert in Kempegowda Ward No-01
Client	The Executive Engineer, Yelahanka Division, BBMP
Job No	QECD/BBMP/YNK/PMC/2019-2020
Mix Type	PCC(1:4:8)
Contractor	Sri P Ravichandra
Test Method	IS : 4031 (part 6)-1988 & Specification for Road & Bridge Works, MORT&H, Rev. V.
Material	Cement
Sample No	1
Sample Collected Date	12-Mar-2019
Test Date	19-Mar-2019

Cube	Cement Grade	Age at Test (Days)	Slump (mm)	Weight (kg)	Dimension (LxWxH)	Density (kg/m3)	Max. Load (KN)	Area (mm2)	Compressive Strength (N/mm2)	Average Sample (n/mm2)
1	43	7	-	0.810	70.6x70.6 x70.6	2302.0	180	4984	38.00	36.45
2	43	7	-	0.830	70.6x70.6 x70.6	2358	185	4984	36.00	

Results: 7-days Compressive strength of cement is 36.45N/mm^2

Comments: 7-days Compressive strength of cement should not be less than 33 N/mm^2

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Test Report
Compressive strength test

Project Name	Construction of RCC Culvert in Kempegowda Ward No-01
Client	The Executive Engineer, Yelahanka Division, BBMP
Job No	QECD/BBMP/YNK/PMC/2019-2020
Mix Type	PCC(1:4:8)
Contractor	Sri P Ravichandra
Test Method	IS : 4031 (part 6)-1988 & Specification for Road & Bridge Works, MORT&H, Rev. V.
Material	Cement
Sample No	1
Sample Collected Date	12-Mar-2019
Test Date	9-Apr-2019

Cube	Cement Grade	Age at Test (Days)	Slump (mm)	Weight (kg)	Dimension (LxWxH)	Density (kg/m3)	Max. Load (KN)	Area (mm2)	Compressive Strength (N/mm2)	Average Sample (n/mm2)
1	43	28	-	0.805	70.6x70.6 x70.6	2287.0	225	4984.36	49.15	48.15
2	43	28	-	0.815	70.6x70.6 x70.6	2316	230	4984.36	46.14	

Results: 28-days Compressive strength of cement is 45.64N/mm^2

Comments: 28-days Compressive strength of cement should not be less than 43 N/mm^2

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Test Report
Gradation test

Project Name	Construction of RCC Culvert in Kempegowda Ward No-01
Client	The Executive Engineer, Yelahanka Division, BBMP
Job No	QECD/BBMP/YNK/PMC/2019-2020
Mix Type	PCC(1:4:8)
Contractor	Sri P Ravichandra
Test Method	IS : 2386 (Part - 1) 1963 & Specification for Road & Bridge Works, MORT&H, Rev. V.
Location	At site
Material	Fine Aggregates
Sample No	1
Sample Collected Date	12-Mar-2019
Test Date	21-Mar-2019

Weight of Sample(gram): 200

Sl No.	IS Sieve Size	Weight retained	% retained	% Cumulative	Cumulative % of Passing		Remarks
					% Passing	Gradation limits	
1	10 mm	0	0.00	0.00	100.00	100	Gradation satisfies the MORT&H Zone II Specification for PQC
2	4.75 mm	11	5.50	5.50	94.50	90-100	
3	2.36 mm	18	9.00	14.50	85.50	75-100	
4	1.18 mm	11	5.50	20.00	80.00	55-90	
5	600 μ	45	22.50	42.50	57.50	35-59	
6	300 μ	60	30.00	72.50	27.50	8-30	
7	150 μ	45	22.50	95.00	5.00	0-10	

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Test Report
Gradation test

Project Name	Construction of RCC Culvert in Kempegowda Ward No-01
Client	The Executive Engineer, Yelahanka Division, BBMP
Job No	QECD/BBMP/YNK/PMC/2019-2020
Mix Type	PCC(1:4:8)
Contractor	Sri P Ravichandra
Test Method	IS : 2386 (Part - 1) 1963 & Specification for Road & Bridge Works, MORT&H, Rev. V.
Material	Coarse aggregates
Sample No	1
Sample Collected Date	12-Mar-2019
Test Date	21-Mar-2019

Weight of Sample: 4000 gms

Sl. No	I.S. Sieve size	Weight Retained (gm)	% of weight Retained (%)	Percentage of weight retained (%)	Cumulative % of Passing		Remarks
					Test Result	Limits as per MORT&H	
1	31.50	0	0.00	0.00	100.00	100	
2	26.50	492	12.30	12.30	87.70	85-95	
3	19.00	320	8.00	20.30	79.70	68-88	
4	9.50	635	15.88	36.18	63.83	45-65	
5	4.75	420	10.50	46.68	53.33	30-55	
6	0.60	950	23.75	70.43	29.58	8-30	
7	0.15	850	21.25	91.68	8.33	5-15	
8	0.08	250	6.25	97.93	2.08	0-5	

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Test Report
Water absorption test

Project Name	Construction of RCC Culvert in Kempegowda Ward No-01
Client	The Executive Engineer, Yelahanka Division, BBMP
Job No	QECD/BBMP/YNK/PMC/2019-2020
Mix Type	PCC(1:4:8)
Contractor	Sri P Ravichandra
Test Method	IS : 2386 (Part - 3) 1963 & Specification for Road & Bridge Works, MORT&H, Rev. V.
Material	Coarse aggregates
Sample No	1
Sample Collected Date	12-Mar-2019
Test Date	21-Mar-2019

Sl. No.	Particulars	Computations	Test Numbers		Mean
			Test 1	Test 2	
1	Weight of SSD sample	W_1 g	761	763	
2	Aggregates Immersed in water	W_2g	2024	2022	
3	Weight of Saturated Aggregate in water	$W_s g = W_2 - W_1$	1263	1259	
4	Weight of saturated surface dry aggregate in Air	W_3 g	2059	2047	
5	Weight of water equal to the Volume of the Aggregate	$W_3 - W_s$	796	788	
6	Weight of Oven dried Aggregate	W_4g	2020	2018	
7	Specific Gravity	$W_4/(W_3 - W_s)$	2.54	2.56	2.55
8	Apparent Specific Gravity	$W_4/(W_4 - W_s)$	2.67	2.66	2.66
9	Water Absorption	$\frac{(W_3 - W_4)\ 100}{W_4}$	1.93	1.44	1.69

Comments: Maximum allowable Aggregate Water Absorption value is 2.0%.

Note:

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Test Report
Impact test

Project Name	Construction of RCC Culvert in Kempegowda Ward No-01
Client	The Executive Engineer, Yelahanka Division, BBMP
Job No	QECD/BBMP/YNK/PMC/2019-2020
Mix Type	PCC(1:4:8)
Contractor	Sri P Ravichandra
Test Method	IS : 2386 (Part - 4) 1963 & Specification for Road & Bridge Works, MORT&H, Rev. V.
Material	Coarse aggregates
Sample No	1
Sample Collected Date	12-Mar-2019
Date	21-Mar-2019

Sl. No.	Determination	Unit	Trails	
1	Weight of empty cylinder, w1	gm	960	960
2	Weight of container filled with Aggregate, w2	gm	1300	1301
3	Weight of the Aggregate before compaction, (w2 - w1) = w3	gm	340	341
4	Weight of the sample passing through 2.36 mm IS sieves after Impact, w4	gm	79	80
5	Weight of the sample retained on 2.36 mm IS sieve after Impact, w5	gm	261	261
6	Aggregate Impact Value (w4 / w3)x100	%	23.24	23.46
7	Specified Limit	%	45.00	

Results: Average Aggregate Impact Value: **23.35** %

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Test Report
Concrete Compresive strength

Project Name	Construction of RCC Culvert in Kempegowda Ward No-01
Client	The Executive Engineer, Yelahanka Division, BBMP
Job No	QECD/BBMP/YNK/PMC/2019-2020
Mix Type	Concrete(M20)
Contractor	Sri P Ravichandra
Test Method	IS : 4031 (part 6)-1988 & Specification for Road & Bridge Works, MORT&H, Rev. V.
Material	Concrete
Sample No	1
Sample Collected Date	25-Mar-2019
Test Date	22-Apr-2019

Cube	Concrete Grade	Age at Test (Days)	Weight (kg)	Dimension (LxWxH)	Density (kg/m^3)	Max. Load (KN)	Area (m^2)	sive Strength (N/mm^2)	Avg. Sample Strength	Avg. Strength
1	20	28	7.91	150*150*1	2343.70	526.00	0.02	23.11	23.30	23.34
2	20	28	7.80	150*150*1	2311.11	531.00	0.02	23.33		
3	20	28	7.70	150*150*1	2281.48	534.00	0.02	23.47		
4	20	28	7.95	150*150*1	2355.56	536.00	0.02	23.56	23.38	
5	20	28	7.91	150*150*1	2343.70	526.00	0.02	23.11		
6	20	28	7.80	150*150*1	2311.11	534.00	0.02	23.47		

Results. 28-days Compressive strength of cement is 23.34 N/mm2

Note:

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Test Report
Concrete Compresive strength

Project Name	Construction RCC Culvert in Kempegowdanagara Ward No-01
Client	The Executive Engineer, Yelahanka Division, BBMP
Job No	QECD/BBMP/YNK/PMC/2019-2020
Mix Type	250mm Slab
Contractor	Sri P Ravichandra
Test Method	IS : 4031 (part 6)-1988 & Specification for Road & Bridge Works, MORT&H, Rev. V.
Material	Precast Slab
Sample No	1
Sample Collected Date	1-May-2019
Test Date	29-May-2019

Cube	Concrete Grade	Age at Test (Days)	Weight (kg)	Dimension (LxWxH)	Density (kg/m^3)	Max. Load (KN)	Area (m^2)	Compressive Strengt	Avg. Sample Strength	Avg. Strength
1	20	28	7.90	150*150*	2340.74	525.00	0.02	23.16	23.32	23.35
2	20	28	7.80	150*150*	2311.11	529.00	0.02	23.33		
3	20	28	7.70	150*150*	2281.48	532.00	0.02	23.47		
4	20	28	7.95	150*150*	2355.56	534.00	0.02	23.56	23.38	
5	20	28	7.91	150*150*	2343.70	524.00	0.02	23.11		
6	20	28	7.80	150*150*	2311.11	532.00	0.02	23.47		

Results: 28-days Compressive strength of cement is 23.35 N/mm2

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Test Report
Steel

Project Name	Construction of RCC Culvert in Kempegowda Ward No-01
Client	The Executive Engineer, Yelahanka Division, BBMP
Job No	QECD/BBMP/YNK/PMC/2019-2020
Contractor	Sri P Ravichandra
Location	Bay
Material	Steel
Sample No	1
Sample Collected	10-May-2019
Date	15-May-2019

Sl. No.	Dia in mm	Weight in Kg/mtr	Average Weight Kg/mtr	Ultimate Load in KN	Ultimate Tensile stress in N/mm^2	Average Ultimate Tensile Stress N/mm^2	Elongation in mm	Bending and Rebending
1	8	0.395	0.4	32.2	640.6	622.7	20	OK
	8	0.398		30.4	604.79			
2	10	0.601	0.6	47.2	600.97	597.15	20	OK
	10	0.593		46.6	593.33			
3	12	0.896	0.88	72.8	643.69	631.32	20	OK
	12	0.872		70	618.94			
4	16	1.598	1.6	118.5	589.37	595.59	20	OK
	16	1.605		121	601.8			

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